

AUTUMN WARBLER MIGRATION.

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IN 'THE AUK,' Vol. XXIII, No. 1, January, 1906, I gave an account of the Warblers noted here in the autumn of 1905. That season I devoted my entire spare time to them from August 20 but this autumn I did not start until September 3; consequently, the following list is inaccurate as to first arrivals but I doubt if anything escaped notice from September 3 to the end of the season. A Mourning (*Geothlypis philadelphia*) and several Nashville Warblers were seen in 1904 but were absent in 1905, while the Tennessee was absent in the former season and common in the latter. This irregularity in warbler migration was interesting, and I wished to learn what percentage of species were subject to it and also to establish a better knowledge of the relative abundance and time of departure by a comparison with the present season of 1906. To get the most uniform results I hunted over the same territory, with the exception of one or two days, and the comparison was satisfactory until displaced by an abnormal change in temperature. During the night of October 9 the mercury dropped to 33°, and we had a genuine heavy snow storm on the 10th, but the snow melted as it fell. Toward evening the mercury began to drop and reached 25° at 3 A. M. on the 11th where it remained for three hours. This killed all plant life, susceptible to frost, and its blighting influence was noticeable throughout the woods on the 14th; even the live oak leaves were affected, while the beeches were a mass of yellow and no longer yielded a food supply to the warblers. With the exception of Black-throated Blue and Myrtle, all the species seen that day were hurrying south under pressure of unnatural excitement, and had probably undergone considerable hardship, as the ground was covered with half a foot of snow sixty miles north of here and about three inches at half that distance.

The woods, where I hunted, had been greatly reduced in size since 1905, and I was able to note the course of arrivals in many cases and departure in nearly all. The length of the River Range is about thirty miles and its general course approximately S. 45° E. This woods is situated on the south side and is the last piece of

thick timber as you follow down the river, there being only a grove between this point and the Detroit River. The bulk of warblers came down this water-way and during the earlier part of the season continued to the grove from whence they must have turned south, as further progress was barred by the Detroit River.¹ Later, however, my piece of timber was the limit of their eastern movement and they went due south from here to a large piece of thick woods. This was the program in 1905 except from September 20 to October 5 when they went southwest to follow a chain of large woods that extended far southward. The lesser number of warblers came from the northeast and had evidently followed the Detroit River. During September about twenty-five per cent. were apparently not migrating but taking life easy and remaining in the woods. I suppose these were the main night travelers and if so, when do migrating warblers sleep? All seen by me exhibited the characteristic activity of the family. We all know that large numbers travel by night, but who has seen them asleep during the day? Judging from my experience with night migration, they sleep from about 11 P. M. to 4 A. M. Of course, I really know nothing positively, and my belief is based only on the fact that the birds were not heard calling between the above mentioned hours, and on the actions of a captive Indigo Bunting (*Cyanospiza cyanea*). This bird was not over a month old when trapped in the summer and soon showed no desire to escape from its cage. It appeared contented, and slept peacefully all night until the advent of the fall migration; even then, there was no change in the day time, but soon after dark it became restless. The performance began with a hopping to and fro on its perch with frequent pauses to partly squat, as if about to spring into the air. At the first call note of a passing migrant it uttered a sharp metallic chirp and flew about the cage, making frantic efforts to escape and, when somewhat exhausted, climbed parrot-like about the cage top trying to force its head between the wires. Toward midnight it quieted down and slept a few hours but became active before daylight. This dominating influence ceased suddenly the latter part of October,

¹ It is an interesting fact that while the Warblers came down this water-way two thirds of the Robins took the reverse course. They mainly came from the east and had probably crossed the Detroit River, but several large flights came from the south.

and had the bird been released after that period it probably would have perished from loss of that mysterious guidance to the south, but, opposed to this, we find the latest warblers the most eager to accomplish their journey. To my mind the early migration demonstrates an instinctive movement. Nothing would seem more natural than the warblers retreating after experiencing actual contact with cold or lack of food, but the first birds are on their way long before the least intimation of cold and while food is abundant. I have seen several small flocks of juvenile Redstarts migrating July 4, and this species first reaches the West Indies the second week in August. My personal observation of their movement here extends from July 4 to October 7. What possible physical condition or prescience could maintain so uniform a southward movement over such a long period, and through seasonal changes, and all it implies, as comprehended by a comparison of July with October? Why should they migrate at all? Why has not nature modified these warblers to the condition of Chickadees? Perhaps the Myrtle Warbler is leading and the others following a gradual modification in favor of permanent northern residence. A few Myrtles winter at least as far north as Maine. At one time they were probably resident in South America and later all wintered there, and at some distant period may become entirely resident on their present breeding grounds.

My observations of the local movement inclines me to believe that the majority of warblers follow the water-ways, probably because the bordering timber is the most suitable and food more abundant. This refers mainly to the earlier birds traveling by easy stages and not handicapped for time. On occasions they do not hesitate to take a northerly course, if the woodlands are more congenial to their tastes, but that they retain a correct sense of direction is plainly shown when a point is reached where further progress would impair the southward movement. This belief is based on observations in Grosse Pointe Township and vicinity where there are no water-ways bordered by timber. Here, on September 3, I discovered a large company of mixed warblers in Gratiot Twp. and followed them about N. 45° E. across Grosse Pointe Twp. and Village of Grosse Pointe Farms to the shore of Lake St. Claire. From this point all suitable territory lay to the

north but they took the opposite direction. On the same date another flock came due east and reached the south end of a large woods. They worked through it to the northern margin and back to the starting point; thence, across the open country about S. 25° W.

From the first week in September there are always late warblers, that is, birds passing days behind the bulk of their species. As the season advances these naturally increase in numbers as more species become affected. After early September single birds or small companies are met with that have come to realize they are due miles to the south, and I doubt if they are in any way influenced from their purpose by convenient food supply, characteristic social tendency or geographical conditions. I spent many hours with the Black-throated Blue Warblers in October. They were neither uneasy nor migrating and assisted me as decoys. They always had a friendly call note for passing warblers, but with decreasing effect as the month advanced. A warbler, bent on business, does not fly from tree to tree but takes spurts of about 100 yards and, after hastily snatching a morsel or two of food, repeats the operation. One or two of the Black-throated Blue Warblers would reply to the first far away note of an approaching warbler and the bird would be sure to pass through or above the flock, exchanging greetings but seldom stopping. This often afforded me a quick wing shot but if not, I could sometimes intercept the bird at the woodland margin, as I knew the point where it would leave, and all such warblers remain longer in the last tree than anywhere while passing through the woods. A late Black-poll once joined a passing flock of Robins but they were going west and the warbler soon turned to the south. All warblers seem to me somewhat indifferent to cold, but snow inspires alarm in even the latest, and a general rapid southward movement — the Myrtle excepted.¹ Of the warblers noted October 14, three species were passing more than a month later than the bulk of their kind. In a measure, this is owing to early species getting into flocks of the later kinds and being influenced by them. Another apparent reason is the

¹ They care nothing for the snow in spring if the mercury is above freezing and the food supply not affected. The only Blue-winged Warbler seen this year was located by its song and in a blinding snow storm in early May. I also followed and watched five other species during that storm and they totally disregarded it.

reluctance of some adult birds to leave their summer quarters. A few adult male Yellow Warblers remain here at least two weeks after the last young bird has departed but, as the last of certain northern species may be represented by either or both adult and young, it would seem as if some of the lingering adults influenced a few juveniles to remain with them and sometimes left the trusting youngsters far in the rear in the wild panic to flee the country.

Satisfactory data, relative to the general distribution of autumn warblers, can only be acquired by the liberal use of a gun. Little reliance can be placed in field-glass observation and I doubt if anyone, familiar with the family, is willing to accept such records as positive in unusual cases, as when birds are exceptionally early, late or rare. Of course the adult males of a few species can be identified with certainty and a bird student, with enough knowledge to have any business in the field, should know the Myrtle in all plumages but he can get no accurate idea of the number of species in his neighborhood, their relative abundance, etc. In just one autumn I established a better knowledge of the warblers here than other parties in fifteen years of field-glass observation.¹ In order to decrease the mortality I used a field-glass as much as possible. It was very useful when warblers were near the ground or in trees to the height of about thirty feet, if the birds possessed distinctive under markings. However, it was practically useless at that

¹ I mention this because my admission, in a previous paper, of having taken specimens aroused the indignation of a certain class and appealing letters were sent to the state game warden and others. I was born a lover of birds and have always taken an interest in their welfare, but when it becomes necessary to secure them in order to do certain work well, I feel justified in doing so. However, discussion is futile but the above class should know that birds will be taken for some time to come. Probably the most effective method of determining routes is "bird tagging," and sooner or later a society will be organized to take up this work, and effective results will depend almost entirely on birds secured; furthermore, much material is at present required to permanently establish the subspecies and define their ranges. It is true that some disapprove of this "hair splitting" but for no good reason that I can see, except they are not interested in the subject or know nothing in regard to it. However, in this, as in other branches, you can not suppress the taste for knowledge and it is better to work out the problem soon as possible than allow it to drag along with forms accepted and then rejected as in the past. In his great work 'The Birds of Middle and North America,' Prof. Ridgway laments the lack of material not only in the foregoing connection but even in establishing plumage variations of actual species. Without further illustrating the necessity of securing birds at the present time suppose we look into the future centuries and we find a subject of great interest requiring a mass of new material. I refer to differentiation or modification.

height against strong light or after sundown, and very uncertain at all times when the birds were in the tall tree tops. To accomplish good results in warbler hunting requires hard work and much patience. At times the woods are apparently void of warblers, but experience has taught me that, at least, a few may be found in every suitable woods. This scarcity may occur in the height of the season and is probably due to drainage by a flock of travelers. If you keep constantly in motion and attend strictly to business the reward is certain, although the amount of success depends on how familiar you are with the woods or, rather, the more favorable places. The terrestrial kinds are not difficult to discover, as you can penetrate their haunts and force them from cover, but the more arboreal species can not be reached in the thick foliage of the forest trees. One of my first experiments was to climb a tree, commanding a view on all sides, and wait for the birds, but in this I was depending entirely on such as chanced in one little spot of a large woods, and even then they were more difficult to see than when looking from the ground, while it was no easy matter to mark down anything shot, and if wounded it was sure to escape before I could reach the spot. I have seen a winged Nashville and Tennessee crawl entirely out of sight beneath a dead leaf when other concealment was wanting. Another of my errors was wasting time in exploring unlikely and out of the way places, believing such localities the most liable to contain rarities. Another point, to be remembered, is that loud noises inspire alarm and the birds flee at the report of a gun; so, by the time you have picked up your specimen the remainder have vanished from sight and hearing. Never shoot into a flock without first ascertaining their direction of travel and you can then sprint one or two hundred yards and get some trace of them again. In the woods the migrating flocks are usually of many species and the beginner is liable to see only the prominent kinds. Sometimes a small company of three or four individuals will work through the woods so much scattered that there will be a hundred yards or so between each bird. They remain silent, except while flying from tree to tree when a sharp peep is uttered to keep in touch with one another. In a case of this kind success depends on quick work and some experience. It does not pay to watch the water holes, as migrating warblers will seldom come down to drink and bathe. A notable fact is that

the success of arboreal warblers in eluding detection is in no way due to wariness or sagacity. They feel absolutely safe in the tree tops and are totally indifferent to what transpires on the ground beneath. The cause is protective coloration and food habits that keep them among the slender twigs and leaves. Of this type is the Tennessee. On windy days they are practically safe among the agitated leaves but are betrayed in calm weather by their natural activity. As another type the Black and White may be mentioned. They spend much time about the tree trunks and large limbs and can not be overlooked. A mounted owl would make an excellent decoy.

In number of species the Mniotiltidae surpass all other families here, and rank second in abundance of individuals. During 1906 I noted thirty species, or six in excess of the Fringillidae. The following data refer to Ecorse Township, Wayne Co., Michigan, and the summer and autumn of 1906, except where otherwise stated.

Warblers seen in spring but absent in fall were: Blue-winged (*Helminthophila pinus*), Orange-crowned (*Helminthophila celata*), Louisiana Water Thrush (*Sciurus motacilla*), Kentucky (*Geothlypis formosa*), Mourning (*Geothlypis philadelphia*) and Wilson's (*Wilsonia pusilia*) — all the best possible for identification.

In preparing the following list I have included a few birds with haunts so similar to the warblers that they were constantly under notice.

YELLOW-BELLIED FLYCATCHER (*Empidonax flaviventris*).— One-noted Sept. 15. Exceptionally common in September, 1905.

RED-BREASTED NUTHATCH (*Sitta canadensis*).— More common than any other season in my recollection. Absent in autumn of 1905. Secured a male January 11, 1891, which is the only winter record here I am aware of.

RED-EYED VIREO (*Vireo olivaceus*).— Abundant until Sept. 15; then rare and last seen Sept. 30. Common 1905, and the last seen were secured Oct. 12 and 15.

PHILADELPHIA VIREO (*Vireo philadelphicus*).— Absent, but noted in spring of 1906 and Sept. 3, 5, 10 and 24, 1905.

WARBLING VIREO (*Vireo gilvus*).— No autumn records in three years in this portion of Ecorse Twp. Common in spring.

YELLOW-THROATED VIREO (*Vireo flavifrons*).— Common, inclusive of Sept. 5, and last seen on the 7th; most abundant the last week in August.

BLUE-HEADED VIREO (*Virco solitarius*).— One adult male Oct. 9. First seen in 1905 on Sept. 28 and common that date and on Oct. 5. Last seen Oct. 8 — one specimen.

BLACK AND WHITE WARBLER (*Mniotilta varia*).— Less common than usual; not more than five seen in one day and usually one or two. Only adult male Sept. 15, but adult males are always rare in autumn. October birds have all been adult and junior females.

GOLDEN-WINGED WARBLER (*Helminthophila chrysoptera*).— Last seen August 26, one bird. This was a male but whether adult or junior is uncertain as it was not secured. Last seen August 20, 1905 — a fine adult male.

YELLOW WARBLER (*Dendroica aestiva*).— Last seen August 17 — an adult male. Six noted August 12, appeared to be adult males. Last seen in 1905 August 19. That season I gave the species especial attention and secured questionable birds — all adult males, however, from and inclusive of July 30.

CERULEAN WARBLER (*Dendroica cerulea*). Last seen August 26 — an adult male. Last seen August 24, 1905 — twenty specimens, being adults and juniors of both sexes but mainly the latter.

CHESTNUT-SIDED WARBLER (*Dendroica pensylvanica*).— One specimen Sept. 3 and one Sept. 23 — both junior males. Last seen Sept. 3, 1905 — fifteen noted and all junior birds, the two secured being males.

OVENBIRD (*Seiurus aurocapillus*).— Not taken after Sept. 5 and nothing known as to age and sex of the later birds. Not taken in 1905 though common.

NORTHERN YELLOW-THROAT (*Geothlypis trichas brachidactyla*).— Have taken no adult males after mid-September and the very latest have been junior females.

YELLOW-BREASTED CHAT (*Icteria virens*).— Last seen July 29 — an adult female in Grosse Pointe Township. Undoubtedly occurred later but this was my last visit to that locality. More common in Gratiot Township where at least six pairs nested in 1906.

AMERICAN REDSTART (*Setophaga ruticilla*).— Last seen Oct. 7 — a junior bird. The three noted Sept. 3 were adult males. Last seen in 1905 was an adult male Oct. 5, and in 1904 two adult males Oct. 2. Adult males are not common during September.

NASHVILLE WARBLER (*Helminthophila rubricapilla*).— Five birds were noted, all adults, the Sept. 23 specimen being a female and the remainder males. Absent in autumn of 1905.

TENNESSEE WARBLER (*Helminthophila peregrina*).— The most common species Sept. 5 to 15, and the first in total number of individuals for the season. Met with every day afield until Oct. 19. The Sept. 3 and 5 birds were mainly adults but the junior birds took the lead from Sept. 7 to October. The two Oct. 14 specimens were adult male and junior female. More abundant than in 1905 and absent in 1904.

WESTERN PARULA WARBLER (*Compsothlypis americana ramalinae*).—

Three birds noted and all adults, the Oct. 7 specimen being a male and the remainder females.

CAPE MAY WARBLER (*Dendroica tigrina*).— All adult birds except two junior females, one secured Sept. 3 and the other Sept. 30. This is the first time I have met with the species here. They ranked seventh in total number of individuals for the season.

BLACK-THROATED BLUE WARBLER (*Dendroica caerulescens*).— First noted Sept 3 — an adult male and female. From Sept. 5 to Oct. 14, both inclusive, there was a mixture of both sexes and ages. The Oct. 23 bird was a junior female. Fourth in total number of individuals for the season.

MYRTLE WARBLER (*Dendroica coronata*).— Not enough taken to judge proportion of age and sex to dates. Second in total number of individuals for the season. Much less abundant than in 1905 and departed earlier. Mr. Edward Arnold informs me he has seen this species in January near Battle Creek, Michigan.

MAGNOLIA WARBLER (*Dendroica maculosa*).— The junior birds first appeared Sept. 3 and the adults on the 15. The three Sept. 30 birds were two adults and one junior — sexes not known. Sixth in total number of individuals for the season.

BAY-BREASTED WARBLER (*Dendroica castanea*).— All junior birds and an equal number of each sex.

BLACK-POLL WARBLER (*Dendroica striata*).— The most common species Sept. 3, and third in total number of individuals for the season. Mixed adults and juniors throughout September. All the October birds were adults, mostly males, but the last specimen was a female. There is no authentic record of this species occurring here in spring but I saw what was probably a small flock May 30, 1905.

BLACKBURNIAN WARBLER (*Dendroica blackburniae*).— Eight birds noted in all, the only adult being the Oct. 9 bird; this was a male.

BLACK-THROATED GREEN WARBLER (*Dendroica virens*).— First noted Sept. 9, an adult female; then a mixture of both sexes and ages inclusive of Oct. 9. The two of Oct. 14 were adult females and the Oct. 21 bird was not secured. Fifth in total number of individuals for the season.

PALM WARBLER (*Dendroica palmarum*).— One specimen, an adult female Oct. 7.

WATER THRUSH (*Seiurus noveboracensis*).— Birds secured were of both sexes but ages uncertain.

CONNECTICUT WARBLER (*Geothlypis philadelphia*).— The two birds noted were adults. Absent in spring but taken spring and autumn of 1905.

CANADIAN WARBLER (*Wilsonia canadensis*).— One of the August 26 birds was an adult male, the first in autumn for three years.

The following list gives the date of the last summer residents and the number seen; also first and last date, with the number seen of the transient species, together with date of greatest abundance and the number; also everything noted in October. A* indicates that one or more were taken on the date to which it is prefixed.

1906.	No. Seen.												Most abundant.								
	July 29	August 17	August 19	August 26	Sept. 3	Sept. 5	Sept. 9	Sept. 15	Sept. 23	Sept. 30	Oct. 7	Oct. 9		Oct. 14	Oct. 19	Oct. 21	Oct. 23	Oct. 28	Oct. 29		
Nashville Warbler													*1						Sept. 9	*75	
Tennessee Warbler													*2							Sept. 30	*12
Western Parula Warbler													*2							Sept. 9	*18
Cape May Warbler													*2							Oct. 7	*75
Black-throated Blue Warbler													*2							Oct. 7	*7
Myrtle Warbler													*1							Sept. 13	*5
Magnolia Warbler													*1							Sept. 13	*75
Bay-breasted Warbler													*1							Sept. 3	*4
Black-poll Warbler													*75							Sept. 3	*75
Blackburnian Warbler													*4							August 26	*4
Black-throated Green Warbler																				Sept. 23	*15
Palm Warbler																				Sept. 23	*1
Water Thrush			1																	Oct. 7	*1
Connecticut Warbler																				Sept. 5	*4
Canadian Warbler																				Sept. 5	*2
Black and White Warbler																				August 26	*2
Golden-winged Warbler																				Sept. 5	*2
Yellow Warbler																				Sept. 5	*2
Cerulean Warbler																				Sept. 5	*2
Chestnut-sided Warbler																				Sept. 5	*2
Ovenbird																				Sept. 5	*2
Northern Yellow-throat																				Sept. 5	*2
Yellow-breasted Chat																				Sept. 5	*2
American Redstart																				August 26	*2